GENERAL INSTRUCTIONS

We have compiled a data base of all of the data products that are listed by the EOS Principal Investigators and Facility Team Members as either output products that will be produced or input products that are needed. The inputs were obtained from the recent "silver bullets" efforts of Drs. Russell, Salomonson, and Way and then updated from the C/D confirmation proposals and the Conceptual Design and Cost Review (CDCR) presentations for the EOS instruments. They are current as of August 1, 1990. In order to sort the parameters in a consistent way we changed or reordered some of the names from those originally specified (e.g., Total Ozone Content becomes Ozone, Total, column) and we aggregated the parameters into several broad areas.

Now we need your help for three reasons. The first is to make sure the data base is complete and correct for your effort. The second is to tell us where we messed up in renaming particular entries. The third is to seek your comments on its organization.

Enclosed you will find two sets of tables. The first (a numbered list of EOS and non-EOS data products) contains information for everyone, the second (Review Form) contains all of the entries that are associated with your name. We would like you to carefully review each of the entries that are yours. Please see if the information we have is correct and fill in the missing fields. This can be done right on the printouts of your entries. In reviewing each of your entries please look at the overall data base for similar measurements. Could you make any changes in the description of your desired input or output parameters that would make it more similar to those for other similar parameters? Questions we would like you to consider include:

1. Could you modify the parameter name so that it would sort into the same area as other similar parameters?
2. Is your parameter listed in the right overall category (e.g., atmospheric radiation, ocean biology) and if not where should it be moved to?
3. Could you use the same units as others producing or using similar information?
4. Could you express accuracy, precision, and resolution in similar ways?

We would also like to adopt a standard way of expressing time coverage. Current inputs are expressed in many ways and we are not certain we understood what you meant in filling in this field. The intent here is to describe the frequency with which the same measurement is made in approximately the same place. Thus for a measurement which is complete every day the answer should be 1/day(day) or 1/day(night). An IR measurement that can be made day and night would be 2/day(day,night). If the same instrument is present on two platforms the answer might be 2/day(day) or 4/day(day,night). (Please notice that the platform overpasses are not evenly spaced and these are not the same as "every twelve or every six hours" respectively, thus if you say a measurement is needed every 6 or 12 hours it can not come directly from EOS instrument measurements.) If an instrument makes a very narrow measurement and requires 16 days (or whatever the repeat period of the orbit is) for complete coverage the answer should be 1/16days. If you are producing or requesting an average measurement (e.g. a daily zonal mean) the answer should be something like 1/day avg. or one/month avg. If you are requesting a measurement that only needs to be made infrequently (e.g. terrain height) the answer should be something like once or once per season.

If you requested an input and now see that one or more of the outputs in the numbered product list will be adequate for your needs, please put the number of the output that you will accept on the Review Form. In doing this please look in the I/O column to see whether the measurement you are referring to is in fact an output or is a listing of someone else's requested input. Once your name is associated as a user or producer of or for someone else's product we will notify you of any changes we receive for that product.

Albert J. Fleig
Associate Project Scientist for Data

8/1/90

SPECIFIC INSTRUCTIONS FOR DATA PRODUCTS REVIEW AND ADDITIONAL DATA PRODUCTS FORMS

The EOS Silver Bullet databases were converted to a common format to enable cross comparison of Interdisciplinary Science (IDS) input data requirements with proposed Facility Instrument (FI) and Principal.Investigator (PI) Instrument measurements. The concept of CATEGORY as defined in Table 2 was introduced, as part of the common format, to divide the data products along the lines of the geological, oceanographic, atmospheric, space environment, and biological sciences. Each data product is also described by a PARAMETER which identifies the physical measurement, and a QUALIFIER which provides supplemental information on unique qualities of that measurement. The PARAMETER and QUALIFIER abbreviations are listed in Table 3. This approach provides common naming conventions among IDS, FI and PI data products.

Field descriptions for the **Data Products List** and the **Product Review Form** are given in Table 1. Tables 4-7 list the Scientific Units Abbreviations, the Horizontal Domain Keyword Definitions, the Vertical Domain Keyword Definitions, and other Field Specific Abbreviations. The fields of the common format are roughly divided into the following categories:

- fields describing the measurement (CATEGORY, PARAMETER, QUALIFIER, and UNITS);
- fields describing the source of information (TYPE, SOURCE, and INVESTIGATOR);
- fields quantifying the resolution, location and accuracy of the measurement (ACCURACY, TEMPORAL RESOLUTION, HORIZONTAL/VERTICAL RESOLUTION, and HORIZONTAL/VERTICAL DOMAIN);
- fields describing the input requirements (CHANNELS and INPUTS).

Please review the content of each field on the **Products Review Form** and provide missing information (blank entries) as appropriate. Corrections to erroneous entries can be made directly on this form. If any of your data products are missing, please enter the appropriate names and descriptions on the **Additional Data Products Form.**

Numbered lists of EOS (**Data Products List**) and non-EOS (**Non-EOS Data Products List**) data products are provided as a reference to facilitate the identification of the data source that best matches the input data requirements on the second part of the Products Review Form. These lists need not be returned.

Only the corrected **Product Review Form** and **Additional Data Products Form** (if applicable) need to be returned. Please note that that these forms consist of two parts:

- **Part A** - Product Number, Category, Parameter/Qualifier, Type, Units, Accuracy (Absolute and Relative), Temporal Resolution, Horizontal (Resolution and Domain), Vertical (Resolution and Domain), and Required Channels.
- **Part B** - Product Number, Category, Parameter/Qualifier, Original Product Name, Required Input (EOS and non-EOS), and Comments.

TABLE-1: FIELD DESCRIPTIONS FOR DATA PRODUCTS LIST AND PRODUCT REVIEW FORMS

Prod Number	Sequential reference number assigned to each data product for use in cross-referencing input/output data dependencies, i.e., designating the specific input products required to product each output product. See the **Data Product List** and the **Non-EOS Data Product List** for a complete list of Product-Numbers.
Category	A first cut categorization of the data products by scientific discipline for the geological, atmospheric, oceanographic, space and biological sciences. See Table 2 for a complete list of these categories.
Parameter/	Primary name describing data product taken from a common dictionary, allowing the cross correlation of science requirements and capabilities among diverse databases, e.g. Temperature. Table 3 lists Parameter abbreviations.
Qualifier	Descriptive terms further describing the measurement variable or product (i.e. Cloud_top). A scientific measurement unit can always be associated with the Parameter and Qualifier taken together, e.g. Cloud_top Temperature. Table 3 lists Qualifier abbreviations.
Type	Type of data product based on investigator (II, FI, PI), and whether the product is input or output (I,O).
Investigator	Name of responsible scientist.
Source	Name of instrument or platform providing the measurement capability.
Units	Scientific units of the data product (in ISU), e.g. °K.
Accuracy	The database contains both the anticipated absolute (ABS) accuracy of the data product and the relative (REL) accuracy (or precision).
Temporal Resolution	Time period of measurement (measurement cycle time, or time to complete one global sample), or for resampled data products, the time period between successive values at a given location or the averaging-time used to compute data product means, e.g. 12 hours, daily, weekly, seasonal, annual.
Horizontal Resolution	Horizontal spatial resolution of each data product, e.g. 10 x 10km, 1° x 1° (latitude and longitude), 5° zonal mean.
Horizontal Domain	The horizontal region over which the measurement is taken or the data product is to be produced, e.g. global, polar, ocean. Table 5 lists the keyword definitions.
Vertical Resolution	Vertical spatial resolution of each data product or measurement, e.g., 1km, 100mb, column (for vertically integrated quantities), NA if not-applicable (surface properties).
Vertical Domain	Vertical region or zone over which measurements are taken or data products are to be produced, e.g. surface, surface to 10km, stratosphere. Table 6 lists the keyword definitions.
Original Product Name	Original product name assigned by responsible investigator.
Required Channels	Spectral channels or bands for which observation data are required for production of the data product.
Required Inputs EOS	Required EOS data product(s) that "best match" the input data required for product generation. On the Product Review Form please list the appropriate Product Numbers from the **Data Product List** (Product-Numbers 1-1726). If a required input EOS product is not in the list, please enter its name and description in the **Additional Data Products Form** and then enter its corresponding Product-Numbers (3001-3020) in the **EOS Data Products Review Form.**
Required Inputs Non-EOS	Required non-EOS data product(s) that "best match" the input data required for product generation. On the Product Review Form please list the appropriate Prod Numbers from the **Non-EOS Data Products List** (Product-Numbers 2000-2061). If a required input non-EOS product is not in the list, please enter its name and description in the **Additional Data Products Form** and then enter its corresponding Product-Numbers (3001-3020) in the **EOS Data Products Review Form.**

TABLE-2 : DATA PRODUCT CATEGORIES

Solid Earth		
GC	Geochemistry	Mineralogy, Soils
GD	Geodynamics/Geomorphology	Tectonics, Geological Products, Elevation
GH	Geo-Hydrology	Hydrological Products, Snow/Ice
VO	Volcanic Activity	Volcanic Morphology, Emissions
Fluid Envelope		
Atmospheres		
AC	Atmospheric Chemistry	Atmospheric Chemistry, Aerosols
AD	Atmospheric Dynamics	Clouds, Temperature, Winds, Surface Heat Budget
AE	Atmospheric Electricity	Lightening
AH	Atmospheric Hydrology	Precipitation, Water Content (Liquid, Vapor)
AR	Atmospheric Radiation	Radiation Budget, Temperatures (Skin, Brightness)
Oceans		
OC	Ocean Chemistry	Salinity, Particulates, Pigments
OD	Ocean Dynamics	Surface Wind and Wind Stress, Ocean Currents, Temperature (Bulk Water)
OH	Ocean Hydrology	Sea Ice
OR	Oceanic Radiation	
Space		
SE	Space Electrodynamics	
Biosphere		
BC	Biochemistry	
BT	Terrestrial Ecosystem Dynamics	Canopy Properties
BM	Marine Ecosystem Dynamics	Phytoplankton, Chlorophyll

TABLE-3: PARAMETER AND QUALIFIER ABBREVIATIONS

Abs	Absolute	**Lat**	Latitude
AC	Alternating Current	**Liq**	Liquid
APAR	Absorbed PAR	**LW**	Longwave
Asymm	Asymmetric	**Max**	Maximum
Atmos	Atmosphere	**Min**	Minimum
Back	Backscattering	**NIR**	Near Infrared
Biochem	Biochemical	**NPP**	Net Primary Production
Bot	Bottom, Base	**OLR**	Outgoing Longwave Spectral Radiation
BRDF	Bidirectional Reflectance Dist. Function	**PAN**	Peroxyacetyl Nitrate
Char	Characteristics	**PAR**	Photosynthetically Active Radiation
Chem	Chemistry	**PBL**	Planetary Boundary Layer
Coeff	Coefficient	**Precip**	Precipitation
Conc	Concentration	**PSC**	Polar Stratospheric Cloud
Corr	Correction	**Rel**	Relative
Curv	Curvature	**Res**	Resolution
DC	Direct Current	**Sfc**	Surface
Deriv	Derivative	**SST**	Sea Surface Temperature
Diff	Differences	**Strat**	Stratosphere
Equiv	Equivalent	**SW**	Shortwave
Evapotrans	Evapotranspiration	**TEC**	Total Electron Content
Fluor	Fluorescence	**TIR**	Thermal Infrared
Fnc	Function	**TOA**	Top of Atmosphere
Geochem	Geochemical	**Trop**	Troposphere
Hor	Horizontal	**UV**	Ultraviolet
Instr	Instrument	**Ver**	Vertical
IPAR	Incident PAR	**VIS**	Visible

TABLE-4: SCIENTIFIC UNITS ABBREVIATIONS

arcsec	arc second	**mg**	milligrams
b	bar	**mg-X**	milligrams of substance X
C	Centigrade	**min**	minutes
cm	centimeter	**mix**	mixing (in mixing ratio)
dB	decibel	**mm**	millimeter
dg	degree	**mmol**	millimoles
DU	Dobson Unit	**mo**	month
dy	day	**mol-X**	moles of substance X
E	irradiance (radiant flux density: W/m^2)	**mW**	milliwatts
G	Gauss (cgs unit of magnetic induction)	**N**	Newtons ($kg/m/s^2$)
g	grams	**nm**	nanometer (10^{-9} m)
GeV	giga-electron volts (10^9 eV)	**no**	number
ha	hectare	**o/oo**	thousandths
hr	hour	**ppb**	parts per billion
Hz	Hertz (1 cycle/s)	**ppm**	parts per million
K	Kelvin (degrees of temperature)	**ppt**	parts per trillion
keV	kilo-electron volts (1000eV)	**recog.**	recognition (in feature recognition)
kg	kilograms	**s**	second
km	kilometer	**seas**	seasonal
kt	kilotonP	**sr**	steradian (unit solid angle)
l	liter	**t**	metric ton
lat	latitude	**Tesla**	mks unit of magnetic flux density ($weber/m^2$)
lon	longitude	**W**	Watts ($kg/m^2/s^3$)
Ly	Langley (insolation: $calorie/cm^2$)	**wk**	week
m	meter	**yr**	year
mb	millibar	**µg**	micrograms
MeV	mega-electron volts (10^6 eV)	**µm**	micron (micrometer: 10^{-6})

TABLE-5: HORIZONTAL DOMAIN KEYWORD DEFINITIONS AND APPROXIMATE FRACTION OF GLOBAL COVERAGE

Horizontal Domain Keyword	Definition	Global Coverage Fraction (percent)
Canada/R	Regional Canadian sites	---
Cryos	Cryosphere	25%
Global	Global surface	100%
Land	Global land surface	20%
Land/Cryo	Land ice and snow regions	10%
Land/L	Local land sites	---
Land/R	Regional land sites	---
Limb	Limb sounding	100%
Local	Local sites	---
Local/6	Six local sites	---
Ocean	Global ocean surface	80%
Ocean/Cryo	Regions with sea-ice	10%
Ocean/I	Ocean with Case I sediments	---
Ocean/II	Ocean with Case II sediments	---
Ocean/L	Local oceanic sites	---
Ocean/R	Regional oceanic areas	---
Ocean/S	Southern ocean	---
Ocean/S,A	Southern & Eastern North Atlantic	---
Polar	Latitudes > 60°N & S	10%
Regional	Regional areas	---
Tropic	Zonal Band 35°N to 35°S	40%
Wetlands	Global wet lands	---

TABLE-6: VERTICAL DOMAIN KEYWORD DEFINITIONS AND APPROXIMATE RANGE FOR VERTICAL COVERAGE

Vertical Domain Keyword	Definition	Vertical Coverage Approx Range
Atmos	Troposphere + stratosphere	Sfc to 30 km
Ex	Exosphere	700 km
In_situ	Spacecraft location (EOS platform)	
Mid_atmos	Upper troposphere to mesopause	10 to 120 km
Near_sfc	Near surface layer (within boundary layer)	Sfc to 1 km
Plume_col	Vertical extent of volcanic eruption plume	
Plume_top	Top of volcanic eruption plume	
Sfc	Surface of ocean or land, regardless of topography	
Strat	Stratosphere	10 to 30 km
Sub_sfc	Layers immediately beneath land surface	
TOA	Top of atmosphere	
TOO	Top of ocean (oceanic mixed layer)	
Trop	troposphere	0 to 10 km

TABLE-7: OTHER FIELD SPECIFIC ABBREVIATIONS

Accuracy		Temporal Resolution	
b	baseline	**zm**	zonal mean
clr	clear (sky)	**(d)**	diurnal
vlc	volcanic eruption	**(n)**	nocturnal
		(d, n)	diurnal and nocturnal